THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 40

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte GORDON W. CULP

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Appeal No. 96-2162
Application No. 08/265,561[1]

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ON BRIEF

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Before THOMAS, HAIRSTON and KRASS, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

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[1] Application for patent filed June 24, 1994. According to appellant, this application is a continuation of Application No. 07/414,176 filed September 28, 1989, now abandoned; which is a division of Application No. 07/252,197 filed September 30, 1988, now U.S. Patent No. 4,928,030 issued May 22, 1990.

This is a decision on appeal from the final rejection of claims 4, 6, 7 and 9 through 14, all of the claims pending.

The invention is directed to a piezoelectric actuator.

Representative independent claim 4 is reproduced as follows:

4. A piezoelectric actuator capable of providing independently controllable motion in first and second angularly disposed planes, comprising:

a first piezoelectric dimorph having a pair of ground electrodes and an active electrode oriented so as to cause an electrical potential across said piezoelectric portion and move said first piezoelectric dimorph in said first plane;

a second piezoelectric dimorph acting in said second plane angularly with respect to the first plane, and said second piezoelectric dimorph being in direct physical and conductive electrical contact with a ground electrode of said first piezoelectric dimorph; and

means for independently controlling an electric field in each of said first and said second piezoelectric dimorphs to produce said independent movement in said first and second piezoelectric dimorphs.

The examiner relies on the following references:

Heinz	4,202,605	May 13, 1980
Staufenberg, Jr. et al. (Staufenberg)	4,727,278	Feb. 23, 1988

Claims 4, 6, 7 and 9 through 14 stand rejected under 35 U.S.C. 103 as unpatentable over Heinz in view of Staufenberg.

Reference is made to the brief and answer for the respective positions of appellant and the examiner.

OPINION

As the examiner explains, Heinz discloses piezoelectric devices acting in various modes; however, Heinz fails to disclose the claimed dimorphs. The examiner relies on Staufenberg for the teaching of dimorphs employed in a multi-axes positioning device wherein the dimorphs permit additive expansion and contraction so that the total movement of an engaging member is greater than the displacement of a single piezoelectric plate. The examiner then concludes that it would have been obvious to employ the dimorph of Staufenberg in Heinz so that Heinz would have the same advantage, i.e., grounded outer electrodes and additive motion for the same applied voltage, taught by Staufenberg.

In essence, the examiner follows the same reasoning applied by this Board in our previous decisions of May 6, 1992 and April 26, 1994. That reasoning was bottomed on the use of dimorphs, as shown in Figure 11 of Staufenberg, for the piezoelectric tilt and tip actuator wafers 45 and 46 in Figure 2 of Heinz, resulting in stacked dimorphs as required by the claims.

However, appellant now argues that such a combination of the reference teachings would result in a stack of dimorphs with insulators therebetween, in contradistinction to that required by the instant claims. While the instant claims do not recite the negative limitation "without insulation therebetween," the claims do require "direct physical and conductive electrical contact" (independent claims 4 and 12) or "conductive electrical contact" (independent claim 11). Therefore, if the double lines between, above and below elements 45 and 47 in Figure 2 of Heinz are, indeed, insulators, then it appears that appellant would have a point that the proposed combination would not result in the claimed subject matter requiring the dimorphs to have contact (physical and/or electrical) with each other.

We have considered the declarations of Mr. Gordon W. Culp, who is also the applicant in the instant case, and we find that the evidence presented therein would tend to indicate that the double lines in Heinz must be insulators. As Mr. Culp explains in detail, at pages 3-4 of exhibit A appended to the brief, in order to provide for the disclosed and desired motion of the wafers in Heinz, the adjacent

surfaces of adjacent wafers will necessarily be biased oppositely and, therefore, insulation must be provided in order to isolate the negative lower surface of one wafer from the positive upper surface of the wafer immediately below it.

Even though Heinz is silent on the character of the double lines in question, the weight of the evidence provided by the declarations of Mr. Culp would appear to indicate that these lines do, in fact, represent insulators. Such evidence, in view of the lack of any meaningful rebuttal by the examiner on this point, leads us to conclude that there is no teaching or suggestion by Heinz of stacking piezoelectric elements so as to be in contact with each other.

Further, while Staufenberg does teach the use of a dimorph, there is no teaching or suggestion therein of stacking such dimorphs in such a manner as to have any physical or electrically conductive contact therebetween. Accordingly, other than hindsight, gleaned from appellant's own disclosure, the artisan would have had no reason to employ dimorphs in place of the piezoelectric elements of Heinz and to eliminate the insulator elements taught therein so as to result in a stack of dimorphs being in direct physical or

electrically conductive contact with each other, as required by the instant claims.

While, in our view, the examiner has presented a prima facie case of obviousness, the evidence presented by appellant, in the form of declarations, successfully rebuts the prima facie case. Accordingly, the examiner's decision rejecting claims 4, 6, 7 and 9 through 14 under 35 U.S.C. 103 is reversed.

REVERSED

JAMES D. THOMAS Administrative Patent Judge	)	
KENNETH W. HAIRSTON Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES

)
ERROL A. KRASS)
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